ENERGY UPDATE

www.energy.ca.gov/pier *Research Powers the Future* November 2001

SOLAR POWER HEATING UP IN CALIFORNIA

With the threat of power shortages and higher electricity bills, California's electricity customers are showing increased interest in turning sun-drenched rooftops into a way to cool down the electricity crises. Rooftops equipped with solar power systems provide customers the option of generating their own electricity. As the technology improves behind solar energy, so does the prospect of it becoming a new choice for ratepayers statewide.

PowerLight integrates insulation with PVs for commercial roofs, providing efficiency and peak energy production

The timing is good. In California's electricity market, demand for power is expected to grow significantly in the next few years. Consumers crave clean and reliable energy – and autonomy from the power grid — especially in urban areas. Solar power, with its ability to provide electricity right at a home or business site, can help offset the need to purchase electricity while increasing consumer autonomy. The challenge for solar power has been to reduce the gap between its high costs and the price of electricity. To close this gap, the California Energy Commission has examined solar power, along with other renewable energy resources, as a pollution-free, renewable energy option for California consumers.

The PowerLight Corporation, with funding assistance from the California Energy Commission's Public Interest Energy Research Program (PIER), is making solar power more affordable and rapidly closing the cost gap.

The future looks bright for solar power as iridescent blue-tinged panels increasingly dot rooftops throughout California. More than ever, producing electricity from your rooftop seems like an awfully good way to hold down the cost of power and protect the environment.

How Solar Power Works

Solar power technology is based on photovoltaics or "PVs" that convert sunlight into electricity through semiconductors built into PV panels. Initially developed in the early 1970s to help power United States spacecraft, the same technology has been used to power solar calculators, watches, freeway call boxes and now homes and businesses.

However, today's solar power systems are far more efficient and less costly than systems developed in the 1970s. As a result of technology and system research, PV systems today have efficiencies five times greater than the earliest systems while their costs are nearly twenty times lower.

In the next step forward, the PowerLight Corporation, a world-leading developer of solar power systems, has discovered an innovative way to construct a long life rooftop that collects and converts the sun's rays into electricity — the "PowerGuard" product. In addition to generating clean energy from the sun, the patented, lightweight PowerGuard modules insulate the building, reducing heating and air-conditioning costs and extending the life of the roof by protecting it from the sun and weather. Industry data conclude that PowerGuard is a superior design over conventional PV systems for similar rooftops.

"By investing in the work of innovative companies like PowerLight, the State of California is taking a leadership role in the development of innovative energy sources," said Energy Commissioner Art Rosenfeld. "We are extremely committed to adopting smart and successful technologies to reduce our energy consumption and save taxpayer dollars. Deploying solar power and making facilities more energy efficient are key components of our overall energy strategy."

A Bright PV Partnership

The partnership between PowerLight and the state go back to the mid-1990s. PowerLight, then a small company called Temenos, applied

(Cont.)

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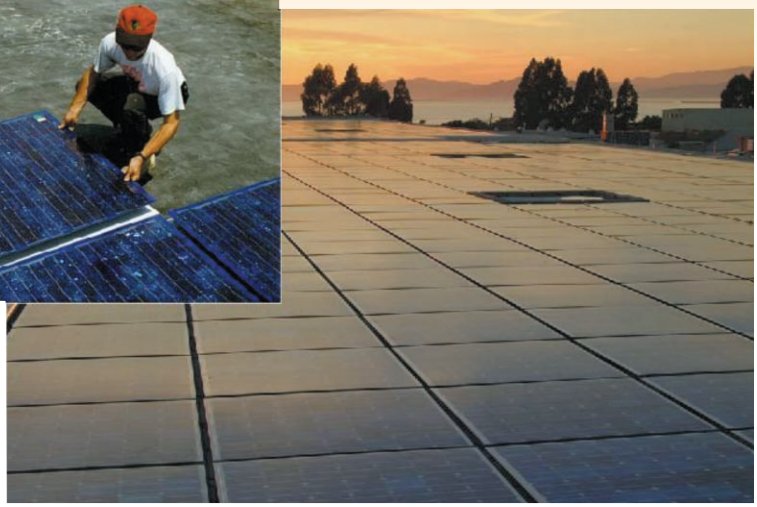
for research funds for a new rooftop PV product it was developing. In 1994, the Energy Commission approved a research project with PowerLight and PowerGuard was created. Successful testing of a pilot-scale system demonstrated the viability of the system to the marketplace. Additional project successes lead to a rapid growth in the emerging company. By 1997, the company had grown from one to seven employees. PowerLight has continued to grow almost exponentially, and by 2000, Inc. Magazine ranked PowerLight among the top 200 fastest growing privately held companies in the country.



PowerLight's Building Integrated PV panels are easily installed on a commercial building

Solar Option Generates Buzz

In April of 2000, PowerLight opened its own 18,000 square-foot solar-powered manufacturing facility in Berkeley, California, which along with other innovations reduced the manufacturing costs of PowerGuard by 57 percent. In addition, PowerLight's manufacturing facility is equipped with a 100-kilowatt PowerGuard system, powering its operations, equivalent to powering 25 homes' annual electrical requirements. For every one kilowatt of solar electricity generated, we save the equivalent of one ton of carbon dioxide released into the atmosphere by conventional power plants such as coal-fired plants.

PowerLight has worked on hundreds of solar electric projects across North America, Asia, Europe, and Australia, with some of the largest here in California. In August 2000, the company installed a 100-kilowatt solar electric PowerGuard system on the Anaheim Convention Center. This solar rooftop system is the largest solar power system on a convention center in North America.

In early 2001, PowerLight began work on installing the nation's largest roof-mounted solar array atop Alameda County's Santa Rita Jail in Dublin, California. The solar deployment is expected to cut electrical costs by 20 percent or $190,000 per year. Clean energy will be generated through a giant 500-kilowatt solar installation consisting of 4,000 roof tiles. That's enough power for 125 homes for a year.

Also, the International Brotherhood of Electrical Workers (IBEW) Local 332 commissioned PowerLight Corporation to install a 23-kilowatt solar power array its new downtown San Jose headquarters. The IBEW will use this building as a training facility for union members interested in learning state-of-the-art solar system installation techniques. By deploying solar, the union will lower costs, reduce pollution and conserve natural resources.

In a joint venture of several companies, PowerLight designed and built AstroPower's solar electric power plant in Hopland, California. This 132-kilowatt solar plant surpassed expectations in its first year of operation, delivering 7% more electricity than forecasted in the midst of the volatile California market.

California Looks on the Bright Side

PowerLight recently released a study that showed about one-third of the state's total electricity demand could be generated by installing solar systems on a small portion of the commercial and industrial building rooftops throughout the state.

"We're excited to offer solar power to more consumers and businesses in California at a time when our energy supply needs to expand," said Dan Shugar, Executive Vice-President of PowerLight. "Our dream is to make clean power a mainstream and significant source of California's energy supply, and our recent installations are proof we're headed in that direction."

Rising power bills and threats of power shortages clearly indicate that more power generation is needed in the state. The California Energy Commission's PIER Program has worked with private companies like PowerLight to create ideal solutions for consumers in solar power. Solar electric power is clean, renewable, non-polluting, and it provides electricity during hot summer days when utility power is in shortest supply.

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